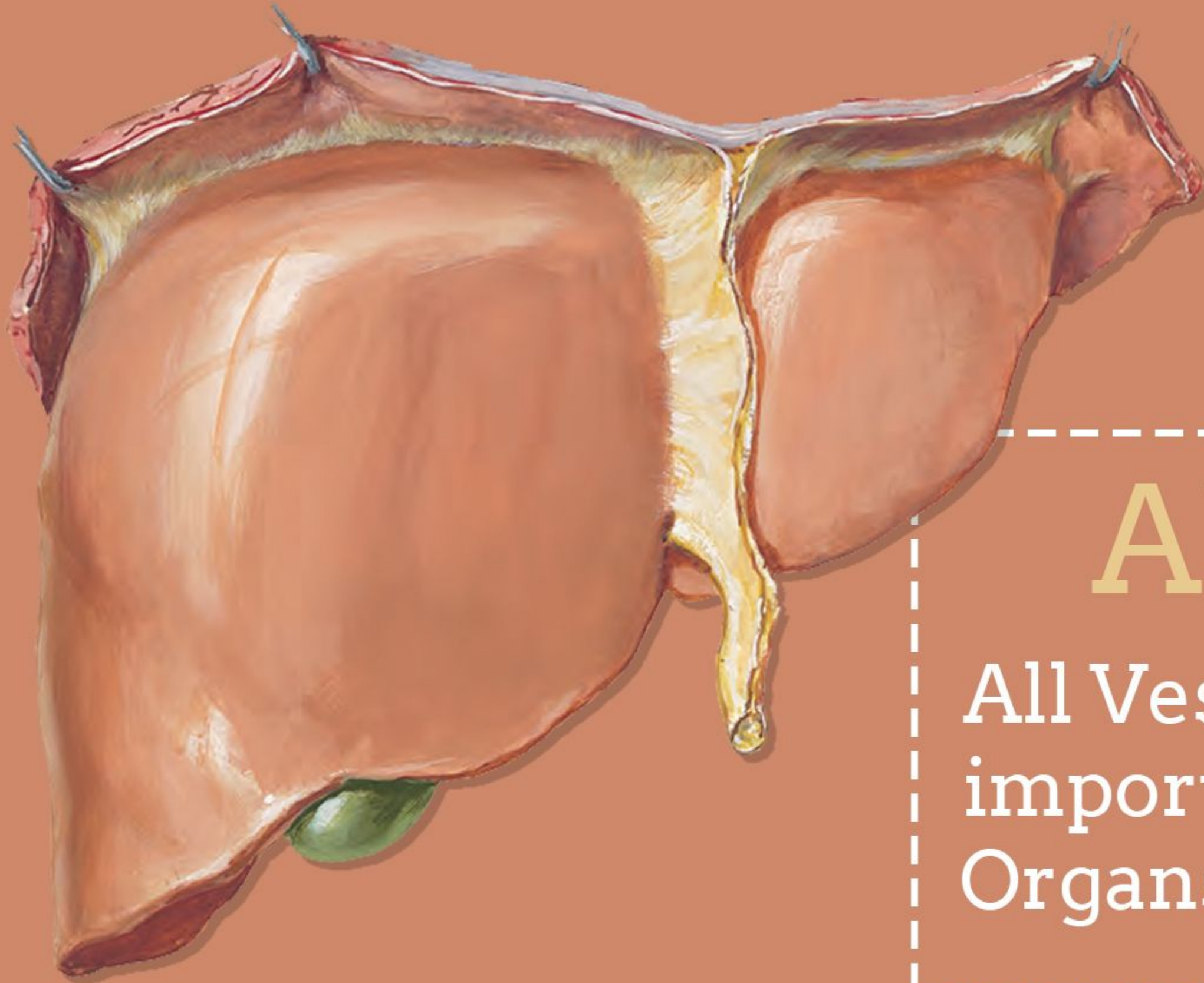


Notes In Anatomy

1st Year



in 36 pages

Abdomen

All Vessels of Abdomen.
important Structures.
Organs.

NowEldin 

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ABDOMEN

①

التاريخ:

موضوع الدرس:

Layers of A.B.W

- ① Skin.
- ② Superficial Fascia. → Superf. Fatty layer [Camper]
- ③ Muscles. 3 → Deep memb. layer [Scarpa]
- ④ Fascia transversalis.
- ⑤ Extra peritoneal fatty tissue.
- ⑥ Parital layer of peritoneum.

Regions of Abdomen

For Clinical diagnosis & Description The Abdomen is dividing into 9 Regions By 2 vertical and 2 Horizontal planes:

① The 2 vertical planes are:

① Rt ② Lt By drawing vertical line from midclav. Point to The mid point of inguinal ligament.

② The 2 Horizontal planes are:

① Sub costal Plane → Draw By line connects Bet lower Border of 10th Costal Cartilage. (cross L3)

② inter tubercular line → Draw By line connects Bet. tubercles of iliac crest (cross L5)

So The 9 Regions are:

UPPER	Rt hypochond.	epi Gastrum	Lt hypochond
Middle	Rt lumbar	umbilical	Lt lumbar
LOWER	Rt iliac fossa	hypo gast.	Lt iliac fossa

● Branches :

- 1 inf. pancreaticoduodenal → [Dudenum + Head of pancreas]
- 2 Middle Colic A → Transverse Colon Rt 2/3
- 3 Rt. Colic A → [Ascend. Colon + Rt. Colic Flexure]
- 4 Jejunal & ileal Br. → 12-15 to jejunum & ileum
- 5 ilio Colic
 - ilial Branches: Terminal part of ileum.
 - Appendicular Br: Appendix.
 - Caecal Branches: Caecum.

Stomach

● site : Epigastrium, lt. hypochond., umbilical.

● shape : Empty stomach J shaped.

● Capacity :

Birth	: 30 ml
Puberty	: 1000 ml
Adults	: 1500 ml

● Anatomical Description :

- [1] * 2 parts [2] * 2 orificies [3] * surfaces
[4] * 2 curvatures.

[1] * Parts of stomach :

By line Drawn Downward and to left Through Angular notch stomach can be Dividing into 2 parts: Differ in Both structure & function :

Ⓐ Left Cardiac part :

Ⓑ Rt Pyloric part :

Fundus → Above level of cardiac orif.

Pyloric Antrum 3"

Body → Below ~ ~ ~

Pyloric sphincter

Pyloric Canal 1" cylindrical



② * orifices :

	Cardiac Orifice	pyloric orifice
level	T ₁₁ , 1 st Lt to middle Line	Transpyloric p. 1/2 Rt
Ant	1 st lobe of Liver	quadrate lobe of Liver
Relation	post: 1 st Crus of Diaph.	post: neck of Pancreas
Guard.	physiological sph.: Flesh of Rt Crus.	Anatom. sph.: Thick. inner circ. musc. layer

③ * surfaces :

Rt part : 1st lobe of Liver

① Ant. Surface: upper

lt part : Diaphragm sep.
 along pleura
Heart Pericard
Costal margin

Lower part : Direct Relation to A.A.W

② Post. Surface :

Related to group of structures forming together:
Stomach Bed

4 vertical

- 1 1st Crus of Diaphragm.
- 2 1st Kidney.
- 3 1st Supra renal gland.
- 4 spleen.

4 Horizontal

- 1 Body of Pancreas.
- 2 Splenic A.
- 3 Transverse Colon. لوحة قصبية
- 4 Transverse mesocolon

All These structure Covered By perit. of Post. Abdom. wall
And separ. from stomach By lesser sac EXC. **spleen**
invested By ~~visceral~~ visceral perit and sep. By great sac

④ * Curvature :

Greater

Lesser

- | | |
|---------------------------------------|--------------------------------------|
| 1 Lt Border of stomach. | 1 Rt Border of stomach. |
| 2 Gives Att. to great. oment. | 2 Gives Attach. to lesser omentum. |
| 3 relat. to Rt, Lt gastroepiploic. v. | 3 related to Rt, Lt gastric vessels. |
| 4 | 4 present Angular notch. |

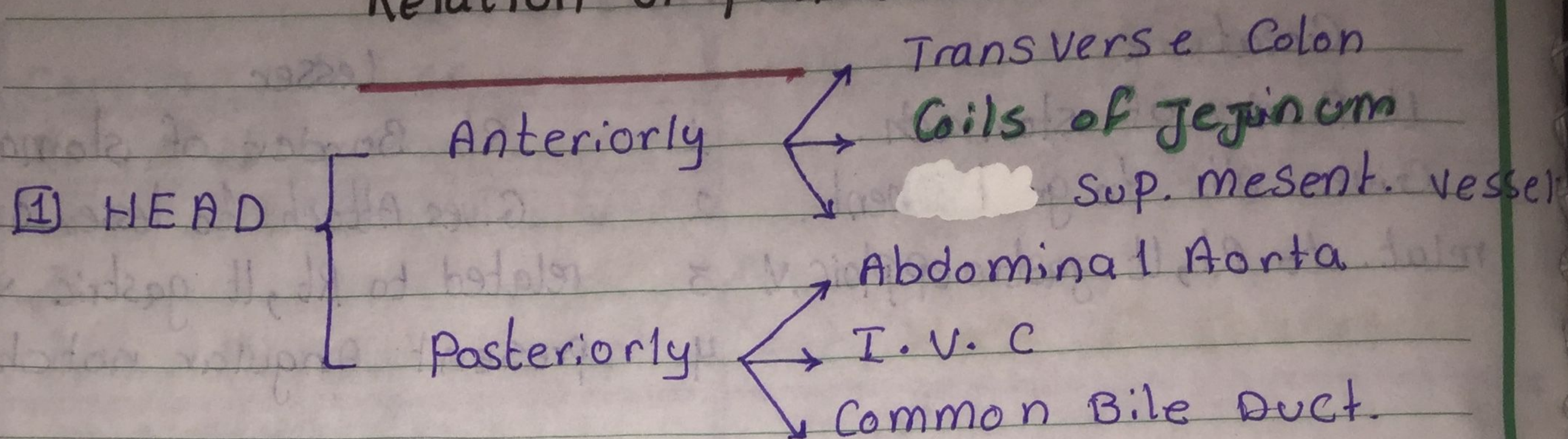
● Arterial supply of stomach :

- | | |
|-------------------|--------------------------------------|
| 1 Lt. gastric | → Celiac Trunk |
| 2 Rt. gastric | → hepatic A proper → Common Hep. → ~ |
| 3 Rt. gast. epip. | → Gastro duodenal A → ~ → ~ |
| 4 Lt gast. epip. | → splenic A → ~ |
| 5 Short gastric A | → ~ → ~ |

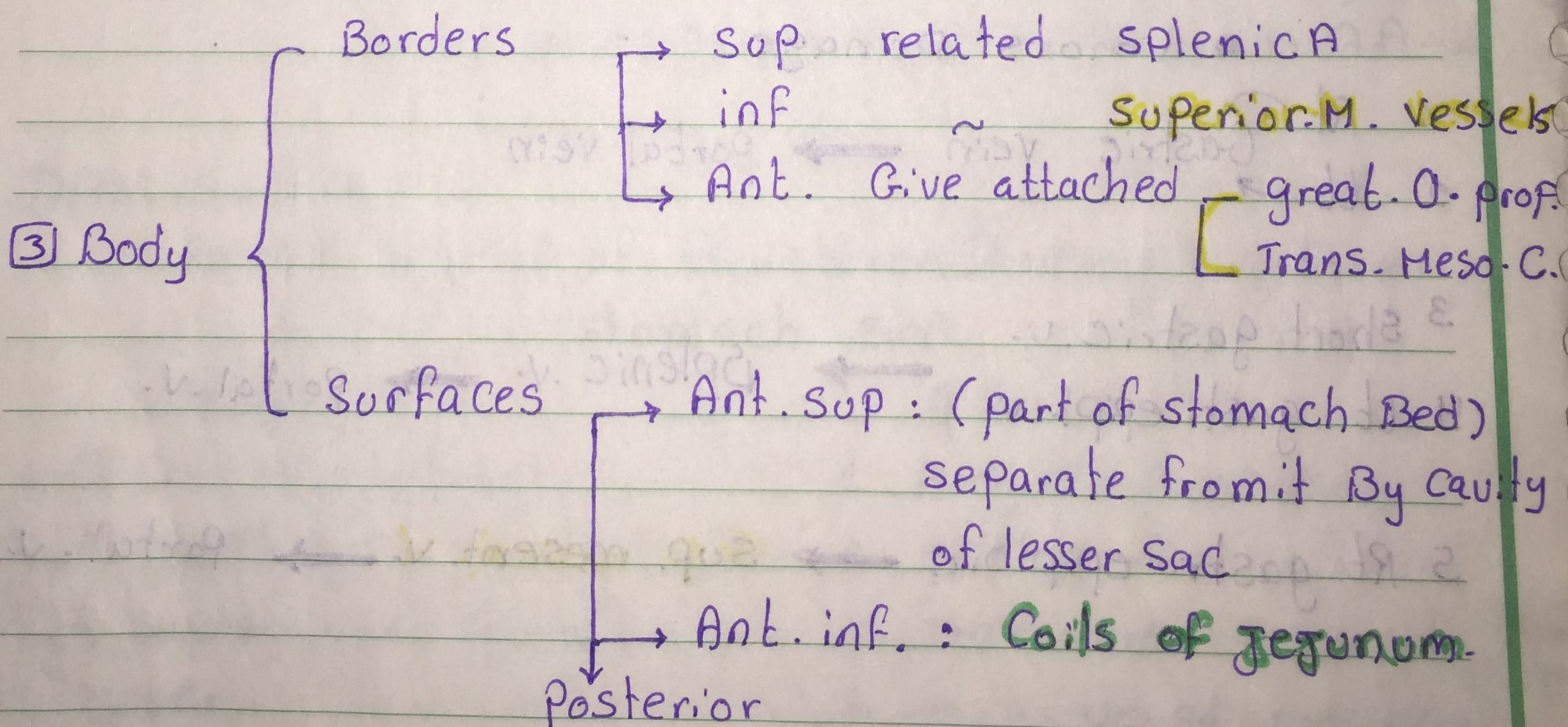
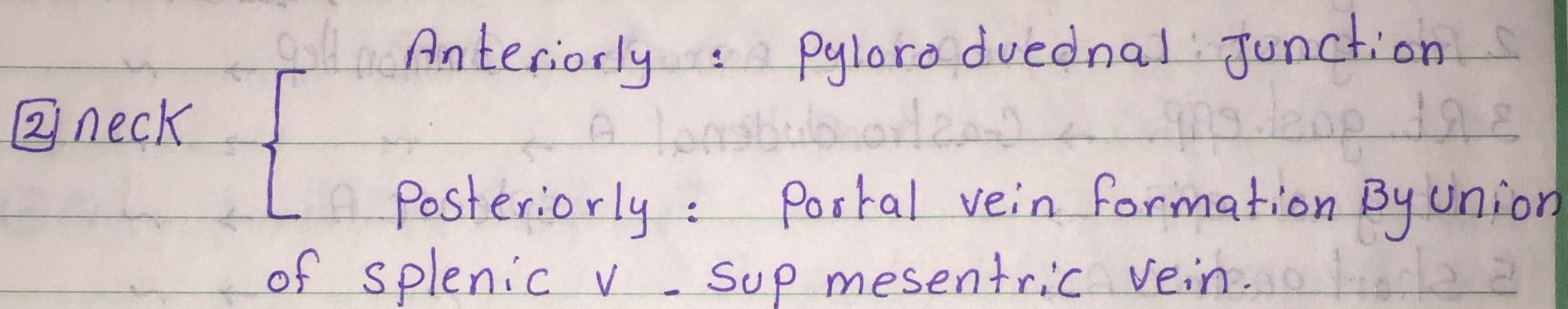
● Venous Drainage :

- | | |
|----------------------|-------------------------------|
| 1 Rt | → Gastric vein → portal vein |
| 2 Lt | → |
| 3 Short gastric. v. | → Splenic v. → portal v. |
| 4 Lt gast. epip. v. | → |
| 5 Rt gastro epiploic | → Sup. mesent. v. → Portal v. |

Relation of pancreas



- surrounded By 4 parts of duodenum.



2 Muscles

2 Arteries

2 Veins

2 glands

1 Lt crus of Diaph.

1 Abdom. Aorta

splenic

Lt Kidney

2 Lt psoas Major.

2 Sup. M. A

Lt Renal

Lt supra renal

Abdominal Aorta

● **Beginning**: Behind median Arcuate ligament at level of T₁₂ as a cont. of Descending Thoracic Aorta.

● **Termination**: at lower Border of L₄ By Piforcation into Rt, Lt common iliac Arteries.

● **Branches**:

22 ^{أبوتوبس}

- | | | | | |
|----------|-----|--------------------------------|------------------------------------|-------|
| ① Single | → 1 | Coeliac Trunk | (at lower Border T ₁₂) | Front |
| | → 2 | Sup. mesent. A | (~ ~ ~ L ₁) | |
| | → 3 | inf. ~ ~ | (at level of L ₃) | |
| | → 4 | median sacral A | (~ ~ ~ L ₄) Dorsal | |
| ② Paired | → 1 | inf. pherinic | | |
| | → 2 | middle supra renal | | |
| | → 3 | Renal | | |
| | → 4 | Gonadal (testicular - ovarian) | | |
| | → 5 | lumbar Arteries | 4 Pairs | |
| | → 6 | Rt, Lt Common iliac | | |

● **Course**: passes Through Aortic opening of diaph. Then in front of upper 4 lumbar vertebral Bodies Slightly to Lt.

I.V.C

● **Relation**: ① Rt Side Azygos vein
cysterna chyli

② Lt Side Lt sympathetic Trunk

③ Post. Body of upper 4 lumbar verteb.



Lumbar plexus

● Definition : plexus of nerves formed inside substance of psoas Major muscle By ventral rami of upper 4 lumbar nerves and responsible for innervation of skin-muscle of lower part of posterior Abdominal wall and front of Thigh.

● Main Event : The ventral rami of L2, L3, L4 Dividing into Ant - post Division.

● Branches :

- | | | |
|---|---------------------------------------|---------------------------------|
| 1 | ilio hypo gastric | L1 |
| 2 | ~ inguinal | L1 |
| 3 | Femoral | Post Division of L2, L3, L4 |
| 4 | obturator | Ant ~ ~ ~ |
| 5 | genito femoral | L1, L2 (roots) |
| 6 | lat Cut. Thigh | Br post Division L2, L3 (roots) |
| 7 | 4th lumbar root of lumbo sacral trunk | (L4) |
| 8 | Accessory obturator | L3 - L4 (Ant. Division). |

● Relation Bet. Branches and psoas Major. :-

- 1 ilio hypo gastric + ilio inguinal → upper part of lat Bord.
- 2 lat cutaneous nerve of Thigh → lat Border at level of iliac crest
- 3 Femoral nerve → ~ ~ ~ Below ~ ~ ~
- 4 genito femoral nerve → Ant. surface of psoas Mj.
- 5 4th lumbar root of lumbo sacral trunk → medial Border + obturator.



Portal vein

- Function: Carry venous drainage from (Git - spleen - Pancreas).
- start like a vein But End like A has no valves.
- Beginning: Behind neck of pancreas By union of
 - splenic V
 - sup mes. V
- Course:
 - ① at its Beginning lies
 - Behind neck of pancreas.
 - in front of I.V.C.
 - ② Behind 1st part of Duodenum
 - Ant 1st part of duodenum But
 - separate By Com. Bile duct
 - Post → I.V.C
 - ③ in rt free margin of lesser om.
 - Ant. to Lt → hepatic A proper.
 - ~ ~ Rt → Common Bile duct
 - posterior → I.V.C But sep.
 - from it By epiploic foram
 - ④ in porta hepatis Dividing into
 - Rt Br → Rt lobe
 - Lt Br → Lt Lobe
- termination: in porta hepatis By dividing into
 - Rt Br
 - Lt Br
- tributaries:
 - 1 sup mesentric vein + splenic vein.
 - 2 Rt Gastric vein + Lt Gastric vein.
 - 3 Cystic vein (from Rt Branch of portal vein).
 - 4 para umbilical vein (from Lt Branch ~ ~).

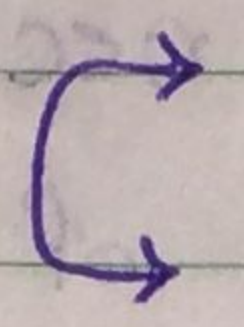


Porto Systemic Anastmosis

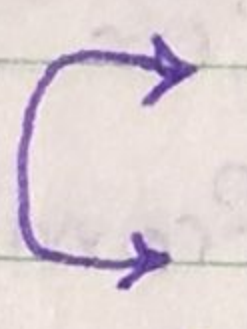
• Definition: Anastmosis Between veins terminate in Portal vein - vein terminate in syst. Circulat

• site:

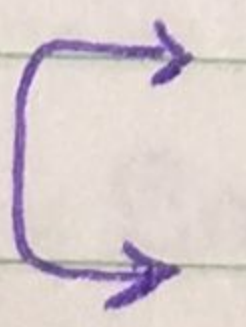
① sub mucosa for lower End of esophagus:

- Between  esophageal vein of left gastric V → Portal
~ ~ ~ ~ ~ Vena Azygos → Syst.
- in case of Liver chirros's [Dilatation and tortiousity of the Anastmosis] Due to hypertension of portal vein:
Esophageal Varices → rupture of varices Haematemesis

② sub mucosa of Anal Canal:

- Between  tributaries of sup. rectal vein → Portal
~ ~ ~ ~ ~ inf ~ ~ ~ ~ ~ → Syst.
- Dilatation - tortiousity of This Anastmosis due to liver chirros's → internal piles

③ Around umbilicus:

- Between:  para umbilical vein → Portal
~ ~ ~ ~ ~ Superficial epigastric vein → Syst.
- dilatation Due to Chirros's → Caput medusa

Haematemesis

قَدِّ دَمِي

internal Piles

يَوَابِي

Caput medusa

رَأْسُ لِسَاحَةِ

④ at bare Area of liver.

⑤ Bet. veins of colon and veins of post. Abd. wall.

Inferior mesentric A

• Artery of Hind gut.

• origin : from front of Abdominal Aorta at level of L3
Behind 3rd part of duodenum.

• Course : it Runs downward and Lt :

3 structure Behind :- 3 structure Lt :-

1 Abdominal Aorta.

2 psoas major. Lt

3 Common iliac A Lt

1 inferior mesentric Vein.

2 Lt ureter.

3 Lt Gonadal A.

• Termination :

By Crossing Lt Common iliac A to Enter The pelvis
and continue as Superior Rectal A.

• Branches :

+ Descending Colon.

1 upper Lt Colic → Lt $\frac{1}{3}$ of Transverse Colon

2 lower ~ ~ → Sigmoid Colon.

Coeliac Trunk

• Artery of Foregut and have no Corresp. vein.

• Beginning : from front of Abdominal Aort at lower Border
of T12

• Branches :

1 Lt Gastric A

2 Splenic A

3 Common hepatic A



4TH
Part

① Lt Gastric Artery:

- Ascending upward and to left on Lt Crus of diaph. to reach oesophagus & passes forward to enter Bdb. 2 layers of ~~Great~~ lesser ~~curvature~~ omentum and Runs to Rt Along lesser Curvature to Anastomose & Rt Gastric A.
- Branches
 - oesophageal Branches
 - Gastric Branches.

② Splenic A:

الكبير أوى

- Runs A tortuous course to left on The Superior Border of Body of pancreas as apart of stomach Bed Then as it reaches **Lt Kidney** Enter linorenal ligament to reach hilum of spleen & give **5-6 Terminal** Branches.

- Branches
 - **5-6 Terminal** Branches (splenic End A)
 - **5-6 Pancreatic** Branches (^{neck} Body-Tail)
 - **5-6 Short Gastric Arteries**:
Enter gastro splenic ligament to reach Fundus
 - Lt Gastroepiploic:

Enter gastro splenic ligament to reach greater Curvature of stomach Runs on Curvature to Rt to Anast. & Rt gastroepiploic. (stomach + Greater omentum).

③ Common hepatic A:

- Runs to The Rt on sup Border of Pancreas to reach **1st part of duodenum** & gives gastroduodenal A and Continue As hepatic Artery proper & Ascending upward within Rt free margin of lesser omentum to reach porta hepatis & Dividing into (Rt hepatic - Lt hepatic)

Trans pyloric plane

- Horizontal plane Drawing By following methods :
 - midway Bet $\rightarrow$ Suprasternal notch + sup. Bord. of Symph.
 - $\rightarrow$ Xiphisternal Junct + umbilicus.

Anatomical Landmarks of trans pyloric plane :

- ① 2 Bones $\rightarrow$ Body of L_1 - Tip of 9th Costal Cartilage.
- ② Head - fundus $\rightarrow$ Head of panc. - Fundus of gall bladder.
- ③ Beginings $\rightarrow$ 1st part of duodenum - sup. mesenteric a
Terminations $\rightarrow$ pylorus - Linea semi lunaris.
- ④ Hila of Both Kidney. ⑤ Pre pyloric vein.

Inguinal Ligament

- Def : Thickened inrolled of lower free Border of Exl. oblique aponeurosis.
- Attachment : ASIS - pubic tubrcle
- 2 surface : ① upper Concave towards ABDomen
gives origin to (internal obliq. - transv. Abdom.)
② Lower Convex towards Lower Limb
gives origin to fascia lata.
- 2 Extensions : ① Lacunar Ligament :
triangular Backward Extension from medial end of inguinal Ligament Have :
 - Apex $\rightarrow$ Attached to pubic tubrcle
 - Base $\rightarrow$ Att sharp - Crescentic - Form med. Bound. of Inguin. Ring
 - Anterior $\rightarrow$ Continuous e inguinal lig.
 - Posterior $\rightarrow$ attached to pectineal line.

• Branches:

1. Gastro duodenal → Descend Behind 1st part of duod. And dividing into 2 Branches:

① Sup. pancreatico Duodenal: runs Bet. duodenum and Head of Pancreas Anastomose to inf. pancreatico Duodenal.

② Rt Gastro epiploic: runs to Lt Bet. 2 layers of greater omentum to Anastomose to Lt Gastro ep. Dued Head Panc. stomac greater oment

2. Rt Gastric A → Br from hepatic A proper in Rt Free margin of lesser omentum run to left along lesser c. to Anastomose to Lt Gastric A.

3. **Supra duodenal A:**

occasional Br Arise from **hepatic A proper** (may Be gastro duodenal) to supply **1st part of duodenum**.

4. Rt hepatic:

to functional Rt lobe of liver
it gives cystic A to gall bladder.

5. Lt hepatic:

to functional Lt lobe of liver.

supply → Cudate lobe.

→ quadrate lobe.

Mesentery of s. intestine

● Definition: double folded Peritoneum suspend Jejunum - Ileum to Post. Abd. wall.

● Description :

Fan shaped Fold having

1 short attached Border :

• 6" in length "Root"

• attached to post Abdominal wall follow Curved Course to Rt

2 long free Border :

• 6 metres long

• enclose Coils of J-I

Extend from duodenojejunal Junction at level of L2 to above Rt sacroiliac joint.

• attached to The following 6 structure on p.A. w:

1 Abdominal Aorta. 2 I.V.C.

3 Rt Illiacus.

4 Rt psoas major:

5 3rd part of D

6 4th Part of D.

● And structure Run in front

Rt psoas:

1 Rt urter 2 Rt genito fem. 3 Rt gonadal vessels.

● Contents of mesentry :.

① within Root :

• sup. mesent. A.

• ~ ~ v.

② Within free Border :

• Jejunum.

• Ileum.

③ within The fold Bet 2 lay.

lymph vess. (lacteals) + loo. Iso L.V.
FAT (Extra perot. F.T.)

البروزة والثالث والرابع
تسمى سببا واختصارا
بـ 1 2 3 4 5 6

scrotum

● Definition: Cutaneous skin pouch containing Testis epididymis and lower part of spermatic Cord.

● layers:

mostly similar And continuous w A.A.w as shown

Layers of A.A.w.	layer of scrotum.
1 Skin → Normal	1 Skin → Pigmented + rugose
2 Superficial fascia:	2 Superficial fascia:
A superficial fatty layer.	A Dartos muscle
B Deep memb. (Scarpa's)	B Deep memb. lay. (Colle's)
3 Ext. oblique.	3 Ext spermatic fascia
4 int. ~	4 Cremasteric Msc and fascia.
5 Transversus Abdom.	5 —
6 Fascia transvers.	6 internal spermatic fascia.
7 Extra Perot. F.T.	7 loose Connective tissue
8 Peritoneum.	8 Tunica vaginalis:
	cover for testis (not layer)

● Arterial supply

Sup. Ext. Pudendal A.

~ ~ ~ A.

Scrotal Br of int. pud. A.

● Nerve supply

ilio inguinal N

Scrotal Br from Pudendal N

● Lymphatic drainage → superficial inguinal L.N.



Penis

● Definition: male organ of copulation.

● Description:

- Consist of
 - 1 root «attached portion»
 - 2 shaft «free portion».

- The free portion Consisted of 3 columns of ~~erectile~~ erectile fibrous:

1 two corpora cavernosa (rt-lt) Lies sup.

2 one median Corpus Spongiosum Lies inf.

● Arterial supply of Penis: 6 BDD

1 Dorsal A of Penis. (Rt + Lt)

2 Deep ~ ~ ~ (Rt + Lt)

3 Artery of The bulb (Rt + Lt)

● Venous drainage of Penis: 2

1 Superficial dorsal vein of penis → G.S.V.

2 Deep dorsal vein of Penis → Prostatic plexus of vein.

● Nerve Supply for Penis:

1 Dorsal N of Penis. → sensory (Rt + Lt) → Pudend

2 Autonomic nerves → for erection.

Testis

- Developed at upper part of P.A.W. Then descend to scrot.

So it drags supplies $\left[\begin{smallmatrix} V \\ N \end{smallmatrix} \right]$ from P.A.W.

- Definition : male primary sex organ suspended in the scrotum by spermatic cord.

- shape, weight, size :

oval 10-15 gm length 1.5"

Thickness 1"

Anteropost diameter .75"

- Anatomical Description :

oval in shape and has :

1 2 Pole

→ upper pole (w spermatic cord att.)
→ lower pole.

2 2 Border

→ Ant. Border
→ Post. Border (w epididymis att.)

3 2 Surfaces

→ medial surface
→ lateral surface (present sinus of epid.)

- Covering :

1 Parietal layer of tunica vaginalis.

2 Visceral

(cover whole)

- except its post. border).

3 Tunica Albuginea : white fibrous coat cover testis all around.

- Arterial supply : testicular A Br. Abdominal Aorta

- Venous drainage : Pampiniform plexus of veins.

- Lymphatics : lateral Aortic [para Aortic].

Epididymis

- Definition: Highly coiled comma shaped tube attache to post. lat. aspect of testis and acts as sperms reservoir.
- length: coiled 1.5" uncoiled 7 metres
- Anatomical discription:
Consist of 3 parts
Head → upper part.
Body → intermediate part.
Tail → lower part & continue as vas deferens.

spermatic Cord

- Definition: group of structure meet at The Deep inguinal Ring and traversed the inguinal Canal Down to scrotum.
 - Covering: From side to inside
- 1 External spermatic Fascia: & Downward prolongat. of Ext. oblique apponeurosis at sup. inguin. Ring.
 - 2 Spermatic Cremastic muscle - fascia: & Extension of fleshy of most lower part of int. oblique.
 - 3 Internal Spermatic Fascia: & Extension from Fascia transversalis at Deep inguinal Ring.

● Constitue of it :

① 3 Arteries :

- 1 Testicular A → Br. from Abdominal Aorta. L2
- 2 Artery to **Cremastic** → Br from inf. epigastric.
- 3 Artery to vasdeference → Br ~ **vescicular**

② 3 Nerves : SGS → 4th part قشرى

- 1 Sympathetic plexus Around testicular A.
- 2 Gen. tal Br of Genito Femoral N.
- 3 Sympathetic plexus Around Vasdeference.

4.5 cm

③ 3 structure é v :

- 1 vas deference : Begining as continuation of tail of epididymis and Terminate in pelvis By union é Ducts of seminal Vesicles to form ejaculatory duct.
- 2 venous plexus : pampiniform plexus of vein : unit at Deep inguinal Ring to form testicular vein w termin. :
A. Rt side → I.V.C.
B. Lt side → Lt Renal vein.
- 3 vestique of Process vaginalis.

④ 3 structure é L :

- 1 **loose areolar** Connective tissue.

- 2 lymphatics to testis.

- 3 ~ Epididymis

} Drain to lat. Aortic
= para Aortic L.N.

lesser sac

● Definition : part of peritoneal cavity lies behind lesser omentum and within greater omentum. — closed all around excepts its upper part of rt Border where it commun. e greater sac Through Epiploic forament.

● Boundaries :

1 Ant. wall

- Caudate lobe of liver
- lesser omentum
- Back of stomach
- Ant 2 layer of greater oment.

2 post wall

- post 2 layer of ~ ~
- pariteal perot. Cover Stomach Bed.

→ **Pariteal perot. Cover :**

- 1 Abdominal Aorta
- 2 Coliac trunk + Branches
- 3 Inferior vena cava

3 upper Border : Protenium Refiection from diaphragm to post layer of lesser omentum.

4 lower Border : formed By greater omentum.

superior → epiploic forament

5 Rt Border

inferior

→ Rt margin of G. oment.

superior

→ meeting of Gastro splenic + lineorenal lig. at hil. of sp.

6 Lt Border

inferior

→ Lt margin of great

● Function :

Acts as bursa allowing stomach to **Expand** so it is called omental bursa.

● Epiploic foramen [opening to lesser sac]

- Definition : vertical opening **Connecting** lesser sac & greater sac.

- **Site** : lies Behind Rt free margin of lesser om.

1 ant. : Rt free margin + its content.

- Boundaries : 2 post. : parital perot cover T.V.C.

3 sup. : Coudate lobe of liver.

4 inf. : 1st part of duodenum.

- Applied Anatomy:

internal Hernia occur Through it.

Lesser Omentum

● Definition: Double layered fold of peritoneum extends from liver to lesser curvature of stomach.

sup. : fissure for ligamentum venosum + porta hepatis.

● Attachment :
 inf. : lower part of esophagus + lesser curvature of stomach + 1st 1" of 1st part of duod.

1 attached border to liver.

● Borders
 2 attached ~ to stomach - esoph. - duod
 3 Rt free margin : Extend from **porta hepatis** to 1st part of duod. (hepato - duod. lig.)

● Contents of lesser omentum:

- 3 structure within free margin
- Common Bile duct
 - portal vein
 - Hepatic A proper.
- 3 structure within attached Border to lesser Curvature.
- Rt gastric vessels
 - Lt ~
 - Sup gastric L.N.
 - Extra perot. F.T.
- 3 ordinary structure Between 2 layers of fold :
- Autonomic nerves
 - lymphatics.

② Reflected part of inguinal ligament:
upward medial Extension from lat crus of Superf. inguinal Ring → Ascend Behind medial Crus to Reach Linea Alba.

Inguinal Canal

● Definition: oblique intermuscular passage in lower part of A.A.W

● Anatomical Description: [Beg - Antwall - Roof
termin. - Postwall - Floor]

① Beginning: Deep inguinal Ring

* Definition ⇒ oval opening in fascia transv.

* Site ⇒ $\frac{1}{2}$ inch above med inguinal point.
Supero lateral to inf gastric vessels

* structure passing Through ⇒ Spermatic Cord ♂
Round Ligament ♀

② termination Superficial inguinal Ring

* Definition ⇒ Δ opening in Ext. oblique Aponeurosis

* site ⇒ Lies Supero lateral to pubic Crest

* structure Passing Through ⇒ Spermatic Cord ♂
Round ligament ♀

Both ilio inguinal N

* Description: Base ⇒ pubic Crest.

Apex ⇒ Direct upward - lat.

Lat Crus ⇒ attached to pubic tubercle.

Med Crus ⇒ ~ ~ Front of Symp

I.V.C

- Beginning: By union of Rt, Lt Common iliac vein at level of L5.
- Termination: By passing Through vena Caval opening of diaphragm at level of T8¹ to Rt of middle line.
- Course: Ascending upward in the Abdomen on Rt side of Abdominal Aorta.
- tributaries: 3 5
 - Cance Liver Grows Rabidly Suggestes Hopeless Fate
 - 1 Rt, Lt Common iliac vein.
 - 2 Rt lumbar veins (3, 4) Rt, Lt.
 - 3 Rt Gonadal veins.
 - 4 Rt, Lt Renal veins.
 - 5 Rt supra renal vein.
 - 6 Rt, Lt Hepatic veins.
 - 7 Rt, Lt phrenic

● Relation:

Duodenum

- Extend from pyloric sphincter to duodeno jejunal flex.
- widest shortest, most fixed part of S. intestine.
- 10" in length.
- shows C shaped concavity to lt. enclose H. of pancreas.
- Retroperitoneal Except its 1st" covered by peritoneum of lesser omentum completely and inf. by great oment.
- Anatomically Described into 4 parts:
 - 1st part → sup. part
 - 2nd ~ → vertical part
 - 3rd ~ → Horiz. ~
 - 4th ~ → Ascending ~

● Arterial supply:

[1] sup. Pancreaticoduodenal.

[2] inf. ~ ~ .

1st Part

L1

"2

1st " Covered inf L.O.M
2nd " retro Perot fixed
Passes upward
Backward
and to Rt

أمامياً
خلفاً
وإلى اليمين

* Anteriorly { neck of G.B
Quad. lobe

أمامياً
خلفاً
وإلى اليمين

* Posteriorly { neck of Pancr.
3 structure:
1 - Portal vein.
2 - Gonadal vess.
3 - Gastrodud. A.
2 - Common Bile D.

* Superiorly: Rt free margin
of lesser omentum and its
ep: plic foramen.

* inferiorly: Head of
pancrease

2nd part

L1-L3

"3

Retro Perot. fixed

* Anteriorly { Rt lobe
T. Colon
Coils - J.

* Posteriorly { Rt Kidney
Hileum ~
Rt P. Maj.

وإلى اليمين
وإلى الخلف

* Lt { Head of Pancrease
Ampula of Vater

* Rt → Rt Colic flexure

2 opening in its posterior
medial border:

① opening for Ampula of
Vattee: Summit of Major
Dudenal Papilli.

② opening of Accessory
panc. Duct: Summit of
minor Dudenal Papilli.

3rd part

L3

"4

Retro Perotin. fixed

* Ant { Coils of Jej.
Root of mesent.

Sup. mesent. vess. S.G.S

Rt psoas / Rt uret.

* Post { Rt Kid.

I.V.C / gonad. vess.

Aorta / I.M.A.

* Superior: Head of
Pancrease and
Ancinate process.

* Inferior: C. Jej.

4th Part

L3-12

Retro Perot. fixed

Ascending upward and
to Lt, On Lt side of
Abdominal Aorta in Lt

* Ant: Coils of Jej.

* Post: { Symp. chain
Gonadal vesses
psoas Lt

* Rt { Aorta

2,3 lumbar ver.

uncinate.p.

* Lt → Lt urter

القولنج
(الجزء)

Arterial Supply

- External Iliac
 - inf. Epi Gastric A
 - Deep Circumflex iliac A.
- Femoral A
 - Superficial Epi Gastric A
 - Superficial Circumflex iliac A
 - Superficial External pudendal.
- Descending Thoracic Aorta
 - Post 10th intercostal A
 - ~ 11 ~ ~ A
 - ~ subcostal A
- internal mammary
 - sup Epi Gastric A
 - musculo phrenic A

Venous Drainage

- above umbilicus
 - sup. epi Gastric vein
 - lat Thoracic vein
- Below umbilicus
 - inf. epi Gastric vein (E.I.)
 - Superficial Epi Gastric vein (GSV)

Cutaneous supply

- Above umbilicus → 7 8 9 intercostal
- umbilicus → 10 intercostal
- Below umbilicus
 - 11 intercostal
 - subcostal
 - ilio inguinal

[1] Ext. oblique, Rectus Abdominis

lower 5 interCostal (n)

sub costal (n)

② int. oblique, Transversus Abdom.

lower 5 intercostal @

Sub Costal (n)

ilio inguinal (n)

ilio hypogastric (n)

[3] pyramidalis

→ subCostal (n)

Ligament Attached to

① peritoneal folds attached to liver :

Border

(A) falciform ligament : sickle shape have 3 surfaces
upper convex $\bar{u}$ attached to Diaph. , A.A.W - lower concave
 $\bar{u}$ attached to sup. surface of liver - lower free border
 $\bar{u}$ extend bet Ant. inf margin of liver and umbicus and
contain (Para umbilical vein - ligamentum teres).

(B) upper, lower Δ - (C) Coronary lig. (D) lesser omentum

[2] Ligam. teres → Formed By obliterated, fibrosed of Umb. v.

[3] ligam. venos. → ~ ~ ~ ~ ~ Ductus. Venos.



③ Anterior wall :

External oblique Aponeurosis Along whole length.
internal oblique Fleshy origing Lat $\frac{1}{3}$ only.

④ Post. wall :

Fascia Transv. Along whole length of The Canal.
Conjoined Tendon medial $\frac{1}{3}$ of The Canal only

⑤ Roof :

Lower Arching fibres of internal oblique +

⑥ Floor :

upper Concave Surface of inguinal ligament.

- site : Just above medial $\frac{1}{2}$ of inguinal ligament
- Length : 4 Cm.
- Direction : Down ward - forward - medially
- Sex variation : Larger in males ♀ than females ♂
- structure passing Through : spermatic Cord ♂
Round ligament ♀
in Both ilio inguinal nerve.

• Biomechanics - protective mechanisms of inguinal Canal :

- * Defination ➡ inguinal Canal Caused weakness in The Lower part of Anterior ABDominal wall.
- copensation of The weakness.

* Mechanisms & Aim :

- ① obliquity of The Canal - The 2 Rings located Apart.

② Deep inguinal Ring supported ^{Ant} → Flesh origin of int. obliq.
^{Suprf.} ~ ~ ~ ^{Post} → Conjoined Tendon.

③ Shutter mechanism of internal oblique Due to tripple Relation Bet. int. oblique & spermatic cord
 So when The muscle Cont. : Roof Descends to Approximate The Floor (inguinal Canal) of The Canal

AIM: prevent herniation of Abdominal viscera in case of ↑ intra Abdominal pressure.

Inguinal Hernias

• Definition: protrusion of any abdominal contents usually intestine into the inguinal canal.

• Types:

indirect (oblique)

Direct

Through deep inguinal Ring Along the Canal -
 Through Superf inguinal Ring Down to scrotum

Pushing forward Through post wall of inguinal canal. immed.
 Posterior to Superf inguinal Ring Through inguinal Δ

Lat. to inf epigas. vess.

Med. to inf epigast. vess.

usually Descend to it

May Descend to it

in new born

in old man

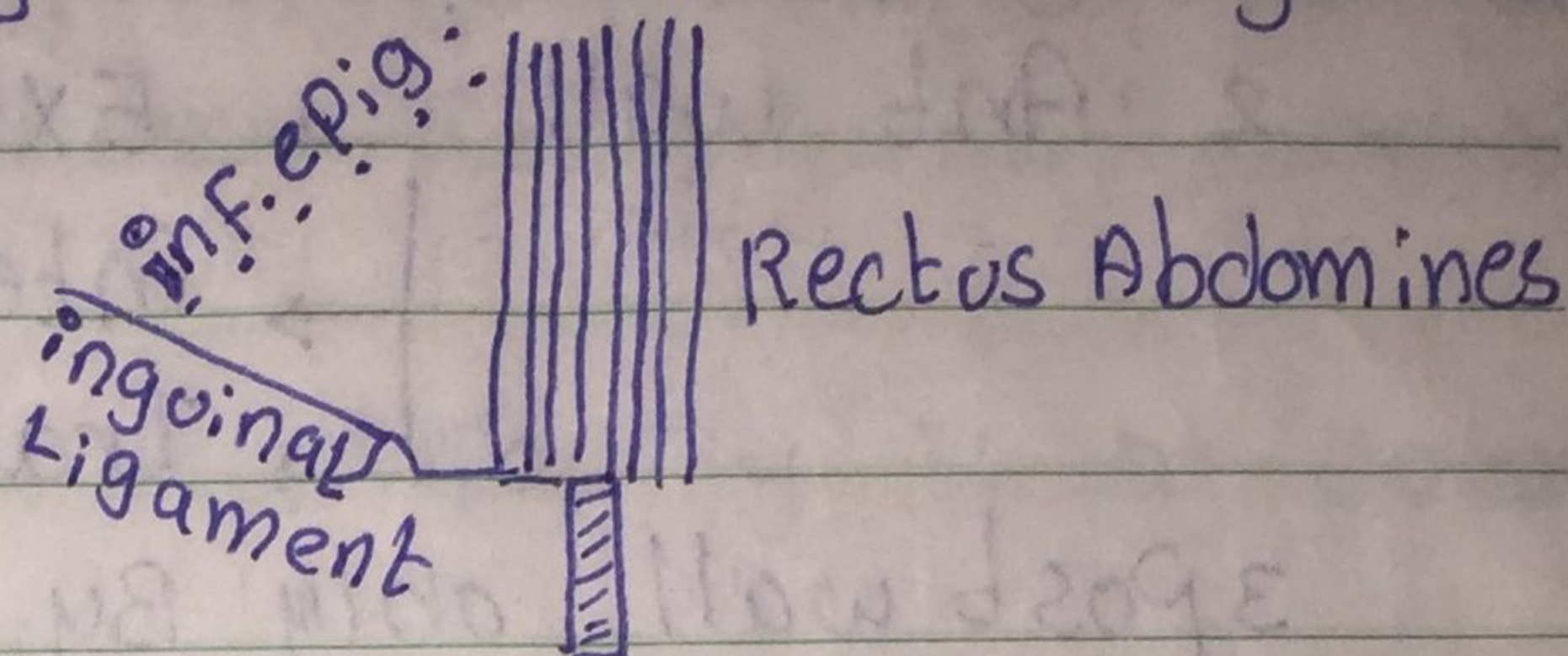
conj. tendon weak → ↑ A. press.



* Inguinal Δ : Hesselbach's Δ

• Important $\Rightarrow$ May Lead to Direct inguinal Hern.

• Boundaries:



Rectus sheath

• Definition: **Aponeurotic** sheath surrounds: rectus Abdominus, Pyramidalis and its associated nerves and vessels.

• **mechanism** of formation:

The main anatomical Event leading to formation of Rectus sheath is splitting of internal oblique aponeurosis at Lateral Border of Rectus Abdominus into 2 lamellae
 Ant. Lamella $\longrightarrow$ Passes in front of Rectus Abdomin.
 Post. $\sim$ $\longrightarrow$ $\sim$ Behind $\sim$ $\sim$ $\sim$

• parts:

① upper part:

1 Above level of Costal margin.

2 Ant wall formed By ext. oblique aponeurosis

3 Post wall $\sim$ $\sim$ 5th 6th 7th Costal Cartilage

② middle part:

1 Extend C level of Costal margin $\rightarrow$ point midway Bet. umbilicus & symphysis Pubis.

2 Ant wall $\swarrow$ Ext. oblique Aponeurosis
 $\searrow$ Ant lamella of internal oblique.

3 Post wall $\swarrow$ Post lamella of internal $\sim$

- 1 Extend from point midway bet. umbilicus & Symphysis pubis to symphysis pubis.
- 2 Ant wall → External oblique Aponeurosis
 └→ internal ~ ~
 └→ Transversus Abdom. ~
- 3 post wall only By Fascia Transversalis.

● Contents :

1. 2 muscles (Rectus Abdominus - Pyramidalis)
2. 2 types of Nerves (Lower 5 intercostal - sup costal)
3. 2 types of vessels (superior & infer. epigastric)
4. Lymphatic vessels.

- importance :

Acts As Retinaculum support Rectus Abdominus muscle By Holding it in position and prevent its Blowing up During its Contraction.

تفحیر

N.B.:

At The point midway Bet umbilicus & symphysis pubis
The lower free border of post wall of Rectus sheath
form what's called linea semicircularis (Arcuate line)

Gall Bladder

- Pear shaped sac resting on gall bladder fossa on inferior surface of liver Between Rt lobe and quadrate lobe.

- Length : 3 - 4"
- Capacity : 30 - 60 ml

- parts - Relations :

	Fundus	Body	Neck
Ant.	Ant. Abdom. wall	Liver	Liver
Post.	Transverse Colon	Transverse.C.	1st part of Duodenum
	Projection Below inferior Border of liver		narrow upper End of Gall Bladder lies near to rt end of porta hepatis

= N.B : Post. medial wall of neck formed Hartmann's Pouch (site for lodging gall stones).

= N.B : Cystic Duct Arise from neck of gall bladder Join common hepatic duct to form Common Bile Duct.

- Peritoneal Covering:

- 1 Fundus [Completely].
- 2 inf. surface (Body - neck).

- Surface Anatomy of neck Fundus :

lies Behind **rip** of Rt **glth**
Costal Cartilage in transp.F

- A. supply : Cystic A → Rt hepatic A.
- V. supply : Cystic V → Rt Branch of Portal vein.
- N. supply : Rt phenic N (sensory).

Covering of Kidney

All Kidney are Covering Except 3 area on ant. Surface of each kidney = Directly related to related structures

Rt Kidney	Lt Kidney
① Area Related to Supra renal gland.	① Area Related to Suprarenal gland.
② Area Related to 2nd Part of Duednum.	② Area Related to Body of Pancrease.
③ Area Related to Rt Colic flexure.	③ Area Related to Descending Colon.

Superior Mesentric Artery

● Artery of midgut.

● Origin : Front of Abdominal Aorta at lower Bord. of L1. Behind Body of Pancrease.

● Course :

1	2	3
at its origin it lies Bet. two Veins :	crosses in front of:	Along its Course it is Related to
1 splenic vein.	1 uncinat Process.	sup. mesentric v
2 Lt. renal vein.	2 3rd part of Duden.	along its rt side
	to Enter:	
	root of mesentry.	

